

GLERL SCIENCE REVIEW Chair and Reviewers

Chair: Dale Hoff

| Primary Reviewers | Research Area Coverage |
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Potential Reviewer Bios for GLERL 2016 Lab Review

Review Panel Chair



Dale J. Hoff

Acting Director, Mid-Continent Ecology Division
Supervisory Research Toxicologist

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Direct funding connections: No known conflicts at this time

Research collaborations: No known conflicts at this time

Dale Hoff is the Acting Director of the Mid-Continent Ecology Division. The Office of the Director is responsible for providing leadership and direction for the Mid-Continent Ecology Division's research program. The office is responsible for planning, directing, and administering the overall scientific and technical management of the in-house divisional research program as well as cooperative agreements and interagency agreements; directing the scientific and technical activities in the implementation of research programs assigned to the division to assure sound experimental design, quality assurance, peer review, and timely completion of scientifically credible products; developing program objectives, operations, and resource requirements to meet current and future divisional needs; providing federal staff support for construction and repair of experimental apparatus and exposure systems; and providing research and science support to the Great Lakes National Program Office, Regions, and States, including the development and application of mathematical models to predict the effects of pollutants on aquatic life as part of community-based studies in the Great Lakes basin.

Education:

- BS, Biology/Chemistry, Buena Vista University, Storm Lake, IA, 1990
- MS, Environmental Toxicology, Clemson University, Clemson, SC, 1992
- PhD, Environmental Toxicology, Clemson University, Clemson, SC, 1998

Research Interests and Skills:

An environmental toxicologist with 20 years of multidisciplinary scientific investigations studying the effects of contaminants on terrestrial plants and wildlife, semi-aquatic wildlife, and aquatic organisms including fish and invertebrates. Extensive experience as an ecological risk assessor in USEPA's Superfund program. Hands-on manager of site investigations conducted toward science-based regulatory decision making.

Selected Appointments/Honors/Major Awards:

- Office of Water Science Achievement Award, 2008
- EPA Bronze Medal Award, 2005
- EPA Regional Science Award, 2004
- Received an EPA Science Achievement Award, 2000

Theme 1: Observations System & Advanced Technology

GLERL's Observing Systems and Advanced Technology (OSAT) branch develops and operates technology for scientific observations of the biological, chemical, and physical components of the Great Lakes ecosystem. In addition, OSAT provides the real-time and historical data necessary to increase the reliability of Great Lakes forecasting on conditions, such as hypoxia and harmful algal blooms. An important role of OSAT is providing the support for research conducted from GLERL's two other science branches, Ecosystem Dynamics and Integrated Physical and Ecological Modeling and Forecasting. Through the development of cutting-edge instrumentation and observing and remote sensing technologies, our OSAT scientists acquire the data and develop information needed to improve our understanding of the Great Lakes ecosystem and support decision-making for improved resource management.

Reviewers for Observations System & Advanced Technology



Dorothy Hall
Visiting Scientist

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*** Note just retired from NASA in August – now at University of Maryland*

Direct funding connections: No known conflicts at this time

Research collaborations: No known conflicts at this time

Working relationships: George Leshkevich, Jia Wang, Ayumi Fujisaki Manome on Great Lakes ice-related research.

Dr. Hall performs research on the remote sensing of snow and ice. She was principal investigator for the Moderate Resolution Imaging Spectroradiometer (MODIS) Snow and Sea Ice Mapping Project that develops and maintains snow and ice algorithms for products used by researchers worldwide. She was also a principal investigator on a snow product validation project for the Visible Infrared Imager Radiometer Suite—a scanning radiometer onboard NASA's newest Earth-observing satellite, Suomi NPP—and on a Greenland ice surface temperature project as well as a co-investigator on other cryosphere-related projects.

She has been an adjunct faculty member at the University of North Carolina at Wilmington in the Department of Geography and Geology (2009–2010), an affiliated professor at George Mason University in the Earth Science and GeoInformation Systems Department (2005–2006), and a distinguished visiting scientist at the University of Delaware, Department of Geography (2002–2003).

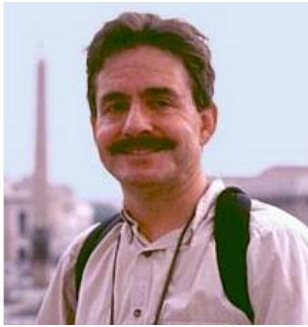
Dr. Hall is an editorial board member for the journal *Remote Sensing of Environment*, and a scientific associate editor for the journal *The Cryosphere*.

She is co-leader of a snow cover focus group for Committee on Earth Observation Satellites Land Product Validation, and a member of the editorial board of NASA's Earth Observatory website.

Dr. Hall's MODIS-related snow and Greenland research may be seen on the MODIS Snow and Ice website.

Research Interests:

Snow cover and climate; Surface temperature of the cryosphere; Greenland surface temperature and melt; MODIS; VIIRS.



Thomas C. O'Reilly
Software Engineer

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Direct funding connections: No known conflicts at this time

Research collaborations: No known conflicts at this time

Thomas O'Reilly is a software engineer at MBARI. His interests include remote sensing of the ocean with satellites, ocean chemistry/biochemistry, and development of Remote Operated Vehicles and Autonomous Underwater Vehicles (ROVs and AUVs). Thomas' responsibilities have included software for Tiburon, MBARI's new 4000-meter depth ROV, and helping to design and build a new AUV. On her first scientific mission, this AUV will perform a survey beneath the Arctic ice-pack, as part of the ALTEX experiment.

Education:

Thomas O'Reilly's educational background is in geology and geochemistry. For most of his professional career he has been a software engineer, working on scientific applications. Prior to joining MBARI, Thomas helped develop a spacecraft instrument known as the Thermal Emission Spectrometer (TES), which is designed to measure properties of the Martian surface and atmosphere from orbit around Mars. TES was successfully launched on November 7, 1996 as part of the Mars Global Surveyor mission payload, and arrived in Mars orbit on September 11, 1997. He also helped design the mission planning system for a joint US/Japan instrument known as ASTER, which will fly on the TERRA Earth-orbiting spacecraft.



Robert A. Weller
Senior Scientist
Physical Oceanography Department
Upper Ocean Process Group

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Direct funding connections: No known conflicts at this time.

Research collaborations: No known conflicts at this time.

Education:

- Ph.D. Physical Oceanography, Scripps Institution of Oceanography, University of California 1978
- A.B. Engineering and Applied Physics, Harvard University

Research interests:

Wind-forced motion in the upper ocean; mixed layer dynamics; upper ocean velocity structure studies; air-sea interaction; development of current meters and surface meteorological instrumentation for air/sea experiments; air-sea fluxes; implementation of the global ocean observing system.

Positions Held

- Principle, Co-Principal Investigator, Coastal and Global Scale Nodes of the NSF Ocean Observatory Initiative (OOI), WHOI 2007-present
- Chair, Department of Physical Oceanography, WHOI 2006-2010
- Director, Cooperative Institute for Climate and Ocean Research 1998-2011
- Senior Scientist, WHOI 1994-
- Associate Scientist with Tenure, WHO 1988-1994
- Associate Scientist, WHOI 1984-1988
- Assistant Scientist, WHOI 1980-1984
- Postdoctoral Investigator, WHOI 1980
- Postdoctoral Scholar, WHOI 1979-1980
- Postgraduate Research Oceanographer, Scripps Institution of Oceanography (SIO) 1978-1979
- Research Assistant SIO 1972-1978

Theme 2: Ecosystem Dynamics

The Ecosystem Dynamics branch collects ecological data and conducts experimental research on the ecosystem processes of the Great Lakes, the largest fresh water system in the world. The Great Lakes ecosystem is dynamic, constantly changing in response to its surroundings. These changes have been accelerated by human-generated factors, such as chemical pollution, invasive species and climate change. Our scientists are exploring how and why these changes are affecting the Great Lakes ecosystem and its health. To answer these questions, Ecosystem Dynamics research, conducted on both a short and long term basis, examines the structure and function of the Great Lakes ecosystem, including the interaction of the ecosystem's biological, chemical and physical components.

Reviewers for Ecosystem Dynamics



Robert W. Sterner
Professor and Director

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Direct funding connections: No known conflicts at this time

Research collaborations: No known conflicts at this time

Robert's work combines biological with chemical approaches to understand lake ecosystems. He is interested in the linkages among the cycles of carbon and nutrients such as nitrogen and phosphorus. This linkage is important in water quality considerations and it plays a large role in determining the structure and functioning of the lower food web including microbes, algae and zooplankton. The study of large lake ecosystems is especially important to him.

His PhD work in Limnology and then his Postdoctoral research at the Max Planck Institute for Limnology in Germany laid the groundwork for an ecological approach now called Ecological Stoichiometry (ES). ES examines how the nutrient content of organisms shapes their ecology and evolution. In 2002, he co-authored a major book on the topic.

He began his first faculty position in 1987 at the University of Texas at Arlington. He moved to the University of Minnesota faculty in 1994 and joined the Department of Ecology, Evolution and Behavior in St. Paul, where he later became department head. Between 2007-2009, Robert served as the Director of the Division of Environmental Biology at the U.S. National Science Foundation. In that post, he was responsible for a \$110 million budget, which made up roughly a quarter to a third of the federal investment in environmental research.

Education:

- University of Minnesota, PhD
- University of Illinois Champaign-Urbana, BS Biology

Research Interests:

- Examination of basic limnological and ecological processes in freshwater seas
- Linkages of multiple element cycles at different observational scales



Russell G. Kreis, Jr. (Alternate Chair)

Supervisory Research Aquatic Biologist, Station Director, Branch Chief

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Direct funding connections: No known conflicts at this time

Research collaborations: No known conflicts at this time

Education:

- BS, Biology, Eastern Michigan University, Ypsilanti, 1972
- MS, Biology, Eastern Michigan University, Ypsilanti, 1974
- PhD, Resource Ecology, University of Michigan, Ann Arbor, 1984

Research Interests and Skills:

Current research interests are focused on the integration of multimedia mathematical models including their development, refinement, calibration, and application. Particular emphasis is given to the effects of nutrients and contaminants both on lower food chain and upper food chain elements regarding productivity and bioaccumulation.

Selected Appointments/Honors/Major Awards:

- Past Secretary, International Association for Great Lakes Research
- USEPA, NHEERL, 2006, Goal 4-Leadership in the Environmental Research Community, Gulf of Mexico
- USEPA, NHEERL, 2006, Goal 1-Support the Agency's Mission Award, Lake Michigan Mass Balance
- USEPA Bronze Medal, 2004 from Region V-GLNPO, Lake Michigan
- USEPA Bronze Medal, 2003 from Region V - Great Lakes National Program Office, Lake Erie

Theme 3: Integrated Physical & Ecological Modeling & Forecasting

The Integrated Physical and Ecological Modeling and Forecasting (IPEMF) branch conducts research to predict the effects of physical, biological, and chemical changes on the Great Lakes system, including those changes generated by humans. To make these predictions, models are developed based on known environmental processes combined with data gathered from field observations on characteristics of the lakes and their surroundings. The mathematical relationships represented in these models are studied to forecast how the Great Lakes environment will change based on different situations. The models our scientists produce help us understand

the processes that connect changes in the atmosphere, freshwater systems and oceans, space, land surface, ice systems with ecosystems, organisms and humans.

Reviewers for Integrated Physical & Ecological Modeling & Forecasting



Ram Yerubandi

Research Scientist & Section Head - Integrated Modelling

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Canada Centre for Inland Waters-Burlington
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Direct funding connections: No known conflicts at this time

Research collaborations: No known conflicts at this time

Dr. Ram Yerubandi is a Research Manager of Watershed Hydrology and Ecology Research Division at Environment Canada and Adjunct Professor at University of Toronto and University of Waterloo. He worked as a Research Scientist (2001-2012) and Section Chief of the Integrated Modelling Division (2012-2014) at Environment Canada. Dr. Yerubandi obtained his Ph.D. in Ocean Modelling from Indian Institute of Technology (IIT) and received post-doctoral training at National Water Research Institute, Canada. His main research interests are physical limnology and water quality modeling of the Great Lakes, estuaries, and coastal seas in response to both natural and anthropogenic factors, and the sustainable management of these water bodies. Dr. Yerubandi has published over 100 papers in journals and books and co-authored two monographs. Dr. Yerubandi serves on many departmental and external committees, e.g., Canadian co-chair for Science Annex of the GLWQA and co-chair for Canada Ontario Agreement, Associate Editor of Journal of Great Lakes Research. He is also Environment Canada's science program lead for Great Lakes Nutrient Initiative and Lake Winnipeg Basin Initiative.

Education:

- PhD, Indian Institute of Technology, Delhi

Current S&T/Research: - Research on hydrodynamics and modelling for rehabilitation and conservation of lakes and inland waters.

- Create new knowledge of physical processes and water quality by conducting field studies in large lakes
- Circulation and Transport modelling in Lakes and Coastal Oceans
- Coupled atmosphere-lake modelling system
- Physical Limnology information for Source Water Protection, Taste & Odour, Algal blooms, Attached Algae and Aquaculture



Kenneth Rose

Associate Dean of Research and Professor, Department of Oceanography and Coastal Sciences

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School of the Coast and Environment, Department of Oceanography and Coastal Sciences
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Direct funding connections: No known conflicts at this time

Research collaborations: No known conflicts at this time

Dr. Rose is the Associate Dean of Research in the School of the Coast and Environment and Professor in the Department of Oceanography and Coastal Sciences at Louisiana State University. His current research is focused on modeling population dynamics of fish and aquatic food webs, and how they respond to a variety of types of stressors including changes in water flows and quality, lethal and sub-lethal effects of contaminants, hypoxia, alteration of physical habitat, and climate change. Dr. Rose has wide experience using a variety of modeling approaches, including models of population dynamics for theoretical investigations and for fisheries management, multi-species and food web models, spatially-explicit models, and was one of the early developers of individual-based modeling. He also has experience with how the different types of monitoring data can be used for quantifying patterns in aquatic systems, and can be used for model configuration and testing. Dr. Rose recently was part of a team that provided briefings to the Executive Office of the President on adaptive management and the science and challenges of large-scale ecosystem restoration. Dr. Rose gave one of the plenary talks at the 56th Annual Conference on Great Lakes Research. He has published over 150 papers, has served on more than 10 journal editorial boards, 5 NRC committees, and multiple proposal and program reviews. He received a BS from State University of New York, Albany and an MS and PhD in Fisheries Science from the University of Washington.

Education:

- BS, State University of New York at Albany, 1979
- MS, University of Washington, 1981
- PhD, University of Washington, 1985

Research Interests:

- Mathematical and simulation modeling of populations, communities, and food webs. Theoretical developments and application to resource management, predicting the effects of habitat changes and climate change.

Awards & Honors:

- Recipient of the Award of Excellence for life time achievement from the American Fisheries Society, 2014
- Fellow of the American Association for the Advancement of Science